

REMARKS/ARGUMENTS

Before entry of this Amendment and Response, the status of the application according to the pending Office action is as follows:

- Claims 1-15 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,186,331 to Kinpara et al. (“Kinpara”) in view of U.S. Patent No. 6,068,668 to Mastroianni (“Mastroianni”), U.S. Patent Nos. 6,375,403, 6,071,059, and 5,772,386 to Mages et al. (“Mages”), PCT Application No. WO 00/33376 to Ishikawa (“Ishikawa”), U.S. Patent No. 6,138,721 to Bonora et al. (“Bonora”), and SEMI E57-0299.
- Claims 16-17 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,030,208 to Williams et al. (“Williams”) in view of Mages.

Applicants respectfully submit that none of the references cited in the Office action, either alone or in combination, provide an enabling disclosure of “a work volume for the door opening mechanism, wherein the volume has a height, width, and depth, and the depth does not exceed 80 mm from the seal plane,” as claimed in independent claim 1. Nevertheless, claim 1 is hereby amended to incorporate language from original claim 6 and additional language to advance the prosecution of this application. No new matter has been added thereby. Support for the amendment can be found at least in paragraphs [0022], [0024], [0031] – [0032]; FIGS. 2A-2B, 6A-7; and claim 6.

Claim 16 is hereby amended to incorporate the language “relative to a wafer processing tool.” No new matter has been added thereby. Support for the amendment can be found at least in paragraphs [0038] – [0039].

Claims 7 and 9-10 are hereby amended to change their dependency from claim 6 to claim

1.

Claim 6 is hereby cancelled without prejudice. Claims 1-5, and 7-17 are currently pending. In view of above amendments and following remarks, Applicants respectfully request reconsideration and withdrawal of the rejections of claims 1-5, and 7-17, and passage of those claims to allowance.

1. Claims 1-15 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kinpara in view of Mastroianni, Mages, Ishikawa, Bonora, and SEMI E57-0299. Applicants respectfully traverse this rejection as applied to the claims, as amended.

Kinpara appears to describe a process for opening and closing a pod door and associated devices for carrying out such a process. In Kinpara, a container 11 is mounted on a stage 13 of a loader 1. The stage 13 supporting the container 11 is driven forward by a driving mechanism 31 towards a door 25 of a high cleanliness room 5. The door 25 does not perfectly seal the high cleanliness room 5; instead, positive pressure within the room 5 produces an air stream 29 through a specific space 27 around the door 25. Thus, a seal is not created between the container 11 and the high cleanliness room 5; rather, air pressure is used to prevent the introduction of contaminants into the room 5. Once the cover 33 of the container 11 contacts the opener 37 of the door 25, various components secure the cover 33 to the opener 37. The stage 13 then withdraws the container 11 away from the opener 37, leaving the cover 33 secured to the opener 37. Subsequently, the opener 37 with the cover 33 fixed thereto is lowered vertically into the loader 1 by a driving mechanism 43. The Ishikawa reference appears to disclose a similar device that utilizes an air stream to prevent introduction of contaminants and a vertically moving door

mechanism. Kinpara does not appear to disclose any dimensions of the work volume in which the door opening mechanism operates.

Mages appears to disclose removing a cover 30 of a container 24 by utilizing an arm 29 and a number of lifting cylinders 32, 33. Once the arm 29 is secured to the cover 30, the arm 29 pitches away from a wall element 28. The arm 29 is connected to the lifting cylinder 32, which in turn is secured to a support plate 34, the entire arm/cylinder/plate assembly configured to swivel about an axis X-X. See Mages, FIGS. 5-6. Thus, the cover 30 is made to tilt away from the container 24 when removed. After being tilted away from the container 24, arm 29 lowers to clear the front of the container 24. An alternative embodiment in Mages appears to disclose a device for opening and closing a closure 83 that first withdraws a cover from a container with a closure element 83. The closure 83 is then driven by a motor 90 to rotate it out of position to allow access to the interior of the container. See Mages, FIG. 18. Similar to Kinpara, Mages does not appear to disclose any dimensions of the work volume in which the pod door removal mechanism operates.

Bonora, Mastroianni, and SEMI E57-0299 appear to disclose various other related processes and interface systems, but appear to disclose neither detail nor dimension regarding the type of closure removal system employed.

In contrast, Applicants claim, in amended claim 1, a pod door opener comprising, *inter alia*, “a door opening mechanism adapted to move in a horizontal direction to remove a door from a pod and, thereafter, move in a vertical direction to displace the door from an opening of the pod;” a bulkhead “defining a pod side, and equipment side and an aperture;” and “a work volume in which the door opening mechanism operates, wherein the volume is disposed on the equipment side and has a height, width, and depth, and the depth does not exceed 80 mm.”

Applicants respectfully submit that the combination of Kinpara with Mastroianni, Mages, Ishikawa, Bonora, and SEMI E57-0299, fails to render obvious Applicants' amended independent claim 1, because the combination fails to disclose at least "a door opening mechanism *adapted to move in a horizontal direction* to remove a door from a pod *and, thereafter, move in a vertical direction,*" wherein the door opening mechanism operates within a work volume "*disposed on the equipment side* [of a bulkhead] and has a height, width, and depth, and the depth does not exceed 80 mm," or any similar structure.

As discussed above, Kinpara and Ishikawa appear to disclose a door opening mechanism that moves in the vertical only, and does not include any structure similar to "a bulkhead *having a seal plane.*" The vertically moving door opening mechanism disclosed in Kinpara and Ishikawa could not be used in a door opening system employing a seal plane, as withdrawing the container to effect a disconnection of the container closure (as required by the two references), would displace the container from the bulkhead and break the seal.

Similarly, Mages does not teach a door opening mechanism "*adapted to move in a horizontal direction* to remove a door from a pod *and, thereafter, move in a vertical direction.*" Instead, Mages teaches a mechanism that tilts, then lowers, the closure, or alternatively, withdraws the closure before rotating it out of position. As discussed above, the remaining references (Mastroianni, Bonora, and SEMI E57-0299) do not appear to address any details of the door opening mechanism employed.

In addition, other references of record that do not form the basis of this rejection, e.g., Williams (U.S. Patent No. 6,030,208) and U.S. Patent No. 6,013,920 to Gordon et al. (cited in an Office action dated March 12, 2003), do not appear to disclose a door opening mechanism operating in a work volume "*wherein the volume is disposed on the equipment side* and has a

height, width, and depth, and the depth does not exceed 80 mm from the seal plane.” Rather, both references appear to disclose door opening mechanisms that operate on both a pod side and equipment side of the bulkhead of a load port interface.

Accordingly, Applicants respectfully submit that independent claim 1 is patentable over Kinpara in view of Mastroianni, Mages, Ishikawa, Bonora, and SEMI E57-0299 under 35 U.S.C. § 103(a). Because claims 2-5 and 7-15 depend, either directly or indirectly, from independent claim 1, and include all the respective limitations thereof, Applicants respectfully submit that these claims are patentable as well. Applicants also respectfully submit that the amendment to claim 1 renders the references to In re Rose, In re Revin, and In re Reese in the Office action moot. Therefore, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 1-5 and 7-15 under 35 U.S.C. § 103(a).

2. Claims 16-17 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Williams in view of Mages. Applicants respectfully traverse this rejection as applied to the claims, as amended.

Williams appears to disclose a thermal processor for treating semiconductor articles. The processor includes a furnace loadport 120 through which semiconductor articles are passed for treatment. A plate 122 is located near the loadport 120 to support a pod 118. A latch 124 secures the pod 118 to the plate 122. The plate 122 can bring the pod 118 into contact with a door 126 of the loadport 120. Upon contacting the door 126, components on the door 126 secure the pod door and withdraw it back into the furnace, then down, thereby leaving the interior of the pod exposed to the furnace. Contrary to the description in the Office action, Applicants respectfully submit that the latch 124 of Williams is not a “seismic anchoring device;” rather, the latch 124 appears to simply lock the pod 118 to the plate 122 during use.

Mages appears to disclose a loading and unloading station for semiconductor processing, components of which are described in detail above. In addition, Mages appears to disclose a wall element 28 that mounts to a wall 43 of a storage unit. The Office action indicates that Mages teaches an upper interface of the wall element 28. Mages does not, however, appear to disclose any kinematic connections between the wall element 28 and the wall 43 of the storage unit.

In contrast, Applicants claim, in amended claim 16, a kinematic tool interface system for use with a pod door opener, the kinematic tool interface system including:

- a lower interface including a kinematic shelf and at least one support bracket, wherein the kinematic shelf and the at least one support bracket can be coupled rigidly to a wafer-processing tool;
- at least one kinematic pin disposed on the kinematic shelf, wherein the at least one kinematic pin is independently adjustable and has a range sufficient to perform pitch, roll, and yaw adjustments to the pod door opener relative to a wafer processing tool;
- and a seismic anchoring device disposed through an underside of the kinematic shelf.

Applicants respectfully submit that the combination of Williams with Mages fails to render obvious Applicants' amended independent claim 16, because the combination fails to disclose at least one kinematic pin disposed on the kinematic shelf, "wherein the at least one kinematic pin *is independently adjustable* and has a range sufficient to perform pitch, roll, and yaw adjustments to the pod door opener *relative to a wafer processing tool*; and a *seismic anchoring device* disposed through an underside of the kinematic shelf."

As disclosed in Williams, the plate 122 only moves the pod 118 forward and backward, and there appears to be no "kinematic pin . . . independently adjustable . . . to perform pitch, roll, and yaw adjustments to the pod door opener relative to a wafer processing tool," nor a "seismic anchoring device disposed through an underside of the kinematic shelf." Williams' lack of such components is not cured by Mages, which does not appear to teach any type of system "to

perform pitch, roll, and yaw ***adjustments to the pod door opener relative to a wafer processing tool.***” Mages, also, apparently fails to disclose “seismic anchoring device” of any sort. In relevant part, Mages only seems to teach an upper interface fixed to the wafer processing tool. Thus, the combination of Williams and Mages would appear to only teach a pod door opener where kinematic connections are not present between the pod and the support plate or between the upper interface and the wafer processing tool. In other words, the pod door opener arising from the combination of the two references is unable to adjust, either at the pod/support connection or at the interface with the processing tool. Thus, the combination of Williams and Mages fails to teach a kinematic pin that “***is independently adjustable*** and has a range sufficient to perform pitch, roll, and yaw adjustments to the pod door opener ***relative to a wafer processing tool***; and a ***seismic anchoring device*** disposed through an underside of the kinematic shelf.”

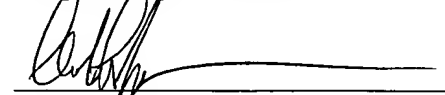
Accordingly, Applicants respectfully submit that amended independent claim 16 is patentable over Williams in view of Mages under 35 U.S.C. § 103(a). Because claim 17 depends directly from amended independent claim 16, and includes all the respective limitations thereof, Applicants respectfully submit that claim 17 is patentable as well. Therefore, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 16-17 under 35 U.S.C. § 103(a).

CONCLUSION

In view of the foregoing, Applicants respectfully request reconsideration, withdrawal of all grounds of rejection, and allowance of claims 1-5, and 7-17 in due course. The Examiner is invited to contact Applicants' undersigned representative by telephone at the number listed below to discuss any outstanding issues.

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Respectfully submitted,



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